

WHAT IS CLAIMED IS

1. A driving apparatus for a display device, comprising:

a driving circuit for generating a signal to allow a display  
5 section to display, said driving circuit having a digital signal  
processing circuit for processing a digital signal, a digital-  
to-analog converter circuit for converting a digital signal to an  
analog signal, and an analog signal processing circuit for  
processing an analog signal; and

10 a power supply circuit for generating a supply voltage for  
said driving circuit; wherein

said power supply circuit reduces the supply voltage supplied  
to said digital-to-analog converter circuit and to said analog  
signal processing circuit, from the supply voltage during the normal  
15 operation, when a predetermined power save is instructed.

2. A driving apparatus for a display device according to claim 1,  
wherein said power supply circuit comprises:

a boosting section for boosting the input voltage;

20 a feedback section for detecting the supply voltage at the  
output end of the power supply as a resistor divided voltage,  
comparing the detected voltage with a reference voltage, and  
controlling said boosting section so that said supply voltage is  
constant;

25 a plurality of resistive elements each with a different  
resistance value and connected to said output end of the power supply  
for detecting said supply voltage; and

a selector switch for selecting a resistive element to be  
connected to said feedback section from among said plurality of

resistive elements; wherein

a divided voltage value of said supply voltage input to said feedback section is adjusted in response to the resistance value of the resistive element selected by said selector switch, and the output supply voltage to said digital-to-analog converter circuit and to said analog signal processing circuit is changed.

3. A driving apparatus for a display device according to claim 2, wherein

a resistive element with a lower resistance value is selected by said selector switch when reduction in the output supply voltage is desired so that the divided voltage value input to said feedback section is increased.

4. A driving apparatus for a display device according to claim 1, wherein

said power supply circuit comprises:

a boosting section for boosting the input voltage;

a boosted power supply output switch for controlling passage between said boosting section and said output end of power supply; and

a non-boosted power supply output switch for bypassing the input and said output ends of power supply; wherein

said two types of output switches are switched and controlled such that one of the boosted or non-boosted supply voltages is output to said digital-to-analog converter circuit and to said analog signal processing circuit.

5. A driving apparatus for a display device according to claim 1,

wherein

said power supply circuit comprises:

5 a boosting section, including a plurality of capacitors and a plurality of switches for capacitors, for boosting an input voltage by switching and controlling said plurality of switches for capacitors;

a boosted power supply output switch for controlling the passage between said boosting section and output end of the power supply; and

10 a non-boosted power supply output switch for bypassing the input and said output ends of the power supply; wherein

a power supply clock produced by said driving circuit using the system clock is used for switching and controlling said plurality of switches for capacitors; and

15 one of the boosted or non-boosted supply voltages is output to said digital-to-analog converter circuit and to said analog signal processing circuit, or the output of said supply voltage to these circuits is suspended in response to the switching control of said output switch and said power supply clock.

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6. A driving apparatus for a display device according to claim 5, wherein

said driving circuit determines a current mode from a boosted power supply generating mode, a non-boosted power supply generating  
25 mode, or a power supply suspension mode, based on a predetermined power save control instruction, and based on the determination controls supply and suspension of supply of said power supply clock or supply and suspension of supply of the clock from said oscillation circuit, and opening/closing of said output switches of said power

supply circuit.

7. A driving apparatus for a display device according to claim 1, wherein

5       said power supply circuit comprises:

        a boosting section, including a plurality of capacitors and a plurality of switches for capacitors, for boosting the input voltage by switching and controlling said switches for capacitors;

        a boosted power supply output switch for controlling the  
10       passage between said boosting section and output end of the power supply; and

        a non-boosted power supply output switch for bypassing the input and said output ends of the power supply; wherein

        a clock from a predetermined oscillation circuit is used for  
15       the switch control of said plurality of switches for capacitors; and

        one of the boosted or non-boosted supply voltages is output to said digital-to-analog converter circuit and to said analog signal processing circuit, or the output of said supply voltage  
20       to these circuits is suspended in response to the switching control of said output switches and the clock from said oscillation circuit.

8. A driving apparatus for a display device according to claim 1, wherein

25       said digital-to-analog converter circuit includes a plurality of voltage dividing resistive elements connected in series to the power supply from said power supply circuit, divides said supply voltage into a plurality of stages by said voltage dividing resistive elements, selects a divided voltage

corresponding to the digital data, and outputs an analog signal.

9. A driving apparatus for a display device according to claim 8, wherein said power supply circuit comprises:

5       a boosting section for boosting the input voltage;  
      a feedback section for detecting the supply voltage at the output end of the power supply as a resistor divided voltage, comparing the detected voltage with a reference voltage, and controlling said boosting section so that said supply voltage is  
10   maintained;

      a plurality of resistive elements each with a different resistance value and connected to said output end of the power supply for detecting said supply voltage; and

      a selector switch for selecting a resistive element to be  
15   connected to said feedback section from among said plurality of resistive elements; wherein

      a divided voltage value of said supply voltage input to said feedback section is adjusted in response to the resistance value of the resistive element selected by said selector switch, and the  
20   output supply voltage to said digital-to-analog converter circuit and to said analog signal processing circuit is changed.

10. A driving apparatus for a display device according to claim 9, wherein

25       a resistive element with lower resistance value is selected by said selector switch when reduction in the output supply voltage is desired so that the divided voltage value input to said feedback section is increased.

11. A driving apparatus for a display device according to claim 8, wherein

said power supply circuit comprises:

a boosting section for boosting the input voltage;

5 a boosted power supply output switch for controlling passage between said boosting section and said output end of power supply; and

a non-boosted power supply output switch for bypassing the input and said output ends of power supply; wherein

10 said two types of output switches are switched and controlled so that one of the boosted or non-boosted supply voltage is output to said digital-to-analog converter circuit and to said analog signal processing circuit.

15 12. A driving apparatus for a display device according to claim 8, wherein

said power supply circuit comprises:

a boosting section, including a plurality of capacitors and a plurality of switches for capacitors, for boosting an input  
20 voltage by switching and controlling said plurality of switches for capacitors;

a boosted power supply output switch for controlling the passage between said boosting section and output end of the power supply; and

25 a non-boosted power supply output switch for bypassing the input and said output ends of the power supply; wherein

a power supply clock produced by said driving circuit using the system clock is used for switching and controlling said plurality of switches for capacitors; and

one of the boosted or non-boosted supply voltages is output to said digital-to-analog converter circuit and to said analog signal processing circuit, or the output of said supply voltage to these circuits is suspended in response to the switching control of said output switch and said power supply clock.

13. A driving apparatus for a display device according to claim 12, wherein

said driving circuit determines the current mode from a boosted power supply generating mode, a non-boosted power supply generating mode, or a power supply suspension mode, based on a predetermined power save control instruction, and based on the determination, controls supply and suspension of supply of said power supply clock, or supply and suspension of supply of the clock from said oscillation circuit, and opening/closing of said output switches of said power supply circuit.

14. A driving apparatus for a display device according to claim 8, wherein

said power supply circuit comprises:

a boosting section, including a plurality of capacitors and a plurality of switches for capacitors, for boosting the input voltage by switching and controlling said switches for capacitors;

a boosted power supply output switch for controlling the passage between said boosting section and output end of the power supply; and

a non-boosted power supply output switch for bypassing the input and said output ends of the power supply; wherein

a clock from a predetermined oscillation circuit is used for

the switch control of said plurality of switches for capacitors;  
and

one of the boosted or non-boosted supply voltages is output  
to said digital-to-analog converter circuit and to said analog  
5 signal processing circuit, or the output of said supply voltage  
to these circuits is suspended in response to the switching control  
of said output switches and the clock from said oscillation circuit.

15. A driving circuit for a display device for generating a signal  
10 to allow a display section to display, said driving circuit  
comprising:

a digital signal processing circuit for processing a digital  
signal;

a digital-to-analog converter circuit for converting a  
15 digital signal to an analog signal; and

an analog signal processing circuit for processing an analog  
signal; wherein

when a predetermined power save is instructed, said  
digital-to-analog converter circuit and said analog signal  
20 processing circuit operate with a supply voltage less than the  
supply voltage during normal operation.